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## RECORDS OF AFRICAN BEES. I

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The bees here recorded were for the most part obtained by Messrs. Herbert Lang and James P. Chapin during their famous Congo Expedition (1909–1915).<sup>1</sup> These specimens are in The American Museum of Natural History and my study of them has been facilitated by the further loan from the American Museum of numerous African bees obtained several years ago from Dr. H. Friese. Of course I have referred continually to my own collection, and particularly to the material brought back from the African Expedition of 1931. Types of new species are deposited in the American Museum.

Collectors' names are abbreviated as follows: L. and C. = Lang and Chapin; J.O. = John Ogilvie; L. O. = (Mrs.) Lizzie Ogilvie; A. M. = Alice Mackie; W. P. C. = (Mrs.) W. P. Cockerell; Ckll. = T. D. A. Cockerell.

### **Nomiooides muiri** Cockerell

Belgian Congo: Boma, June 18, 1915, ♂ (L. and C.). This seems to be exactly the same as *N. muiri*, generally known as an East African species, but a female specimen is desirable. I have both sexes from Sawmills, S. Rhodesia, Dec. 22, 1928 (Arnold), and it has been collected at Mfongosi, Zululand (Jones), and at Windhoek in S. W. Africa.

In the Cape Province the common *Nomiooides* is *N. maculiventris* (Cameron), originally described as a *Ceratina*. We got it at flowers of *Mesembryanthemum* at Whitehill, Nov. 26 (Ckll.), and Colesburg Junction, Oct. 23 (W. P. C.); but it is not strictly oligotropic, as it was found visiting a quite different plant, not identified, at Blaukrans, near Calvinia, Nov. 17 (Ckll.). Another locality is Graaff-Reinet, Oct. 26 (A. M.).

This *N. maculiventris* closely resembles (female) *N. cruciferarum* Ckll. from Morocco, but is easily separated by the conspicuous dark band between the yellow of the scutellum and postscutellum.

The S. African *Nomiooides* now before me may be separated thus:

<sup>1</sup>We met Mr. Lang in Pretoria, and had the pleasure of hearing from him many stories of his adventures in the Congo.

1.—Males.....	2.
Females.....	3.
2.—Abdomen rather broad, without light markings; tibiæ and tarsi clear yellow (Port Elizabeth, Oct. 29, J. O.).....	<i>N. halictoides</i> Blüthgen.
Abdomen rather long and narrow, with yellow bands on tergites 2 and 3; first tergite blue.....	<i>N. muiri</i> Cockerell.
3.—Scutellum dark green; abdomen with light yellow bands, and a spot on each side of first tergite (Doorn River, near Camfer, Nov. 3, A. M.).	
Scutellum yellow.....	<i>N. capensis</i> Blüthgen. 4.
4.—Yellow of scutellum deeply notched in front; postscutellum yellow.	
<i>N. muiri</i> Cockerell.	
Yellow of scutellum not at all notched.....	<i>N. maculiventris</i> (Cameron).

*N. muiri* was described by Friese as *N. fasciatus* Friese, but that is really another species, found in Egypt, Sudan, and Algeria. Blüthgen treats *N. muiri* as a race of the Palæarctic *N. variegata* (Olivier) and refers *N. maculiventris* to the Palæarctic *N. facilis* (Smith). I prefer to treat them as distinct species, but there may well be legitimate differences of opinion.

**Gronoceras tricolor** (Friese)

Belgian Congo: Medje, April–May, 1910, ♂ (L. and C.); Poko, Aug. 13 (L. and C.); Stanleyville, April 7 and 27, 1915 (L. and C.).

**Gronoceras benguennensis** Cockerell

Belgian Congo: Banana, Aug., 1915 (L. and C.).

**Gronoceras cincta** (Fabricius)

Belgian Congo: Faradje, Nov., 1912 (L. and C.).

**Megachile rufipes** (Fabricius)

Belgian Congo: Boma, June 14, 1915 (L. and C.). Scape partly red.

**Megachile rufipes xanthoptera** (Schletterer)

Belgian Congo: Poko, Aug., 1913 (L. and C.).

**Megachile pachingeri** Friese

Belgian Congo: Stanleyville, April 12, 1915 (L. and C.).

**Megachile torrida** Smith

Belgian Congo: Banana, Aug. 15 (L. and C.).

**Megachile bituberculata** Ritsema

Belgian Congo: Stanleyville, April 10, 1915 (L. and C.); Tshibinda, Aug. 25 (W. P. C.); Dilolo, July 25 (J. O.); Tenke, Aug. 1 (J. O.); Poko, Aug., 1913 (L. and C.). The variety *mediocana* Cockerell, with hair

of metathorax and base of abdomen white, was taken at Tshibinda and Dilolo. At Tshibinda both the typical form and the variety *mediocana* were taken, the latter being (at least in that locality) no more than an individual variation.

**Megachile clypearis** Friese

Belgian Congo: Stanleyville, April 30, 1915 (L. and C.).

**Megachile crocutella** Cockerell

Belgian Congo: Stanleyville, April 4-17 (L. and C.); Gamangui, Feb., 1910 (L. and C.); Akenge, Oct., 1913 (L. and C.). Compared with *M. crocuta*, the described difference in the mesothorax stands, but one is large (about 14 mm. long), and some show a very narrow shining edge to clypeus. I am by no means sure that this is not the female of *M. crocuta*, after all.

**Megachile crocuta** Schletterer

Belgian Congo: Stanleyville, April 27, 1915 (L. and C.).

**Megachile obtusodentata** Friese

Belgian Congo: Stanleyville, April 2, 1915 (L. and C.).

**Megachile rhodesica** Cockerell

Belgian Congo: Libenge, Ubangi District (H. Schubotz). Sent by Friese as *M. venusta* Smith. The real *M. venusta* was taken in the Cape Province: Calvinia, Nov. 11 (J. O.); Doorn River, Nov. 3 (L. O.); Nieuwoudtville, captured by a thomisid spider (W. P. C.); and in the Transvaal: Wonderboom, near Pretoria, Oct. 4 (J. O.).

**Megachile ancillula** Vachal

Belgian Congo: Stanleyville, April 15 and 19 (L. and C.); Faradje, March 30, 1912 (L. and C.).

**Megachile claribasis**, new species

FEMALE.—Length about 18.5 mm., anterior wing 13.3; black, including mandibles, antennæ, tegulae, and legs; wings with nearly the basal half hyaline, slightly yellowish, the apical half (beginning at level of apical part of first cubital cell) dark fuliginous, shining violaceous; head rather large, facial quadrangle about as broad as long; eyes brown; mandibles very broad, with two apical teeth, and a long cutting edge which is first strongly convex and then (toward the inner angle) concave; clypeus short and broad (but not as in *Eumegachile*), convex, densely and roughly punctured (the punctures of different sizes), the upper half with a median shining raised band, the apical region depressed, the margin smooth, with slight elevations at sides, but no definite tubercles, and no median emargination; supraclypeal area finely and closely punctured all over; cheeks with a sharp edge behind; hair of head mostly short and black, dense at sides of face and on front; a little patch of light hair next

to upper part of clypeal margin on each side; a tuft of pale, fulvous-tinted hair between antennæ; lower part of cheeks with much pale hair, but black on lowest part; hair of mesothorax and scutellum short, very thin, and black; a little pale hair on middle of mesothorax anteriorly; metathorax with copious white hair; tubercles with pale fulvous hair, contrasting with the black in front of them; hair of mesopleura and under side of thorax pale, silky, fulvous-tinted; mesothorax anteriorly dull, with dense small punctures, but the posterior half polished, with the punctures well separated; axillæ swollen, the elevated part smooth and shining, the outer face with dense black hair; scutellum convex, anteriorly shining and impunctate, posteriorly rough and dull; tegulæ large, densely and minutely punctured, seen from in front showing a small shining eminence; basal nervure falling just short of nervulus; second cubital cell long; legs with thick broad basitarsi, anterior ones with more or less pallid shining hair on outer side, but very dark reddish on inner (the second joint on inner side with a fringe of copper red); middle basitarsi on outer side with dense shining creamy-white hair; hind tibiæ with white hair, clear and bright on inner side; hind basitarsi flattened, as broad as tibiæ, longer than the other joints together, the hair on the inner side very dark rusty brown, on the outer thin and white; abdomen with small weak punctures, more than apical half of second tergite (bounded by a sharp rim) practically impunctate; sixth tergite in profile slightly concave; first tergite above with thin white hair, but sides with large, dense, pure white patches; tergites 2 to 5 also with dense, pure white hair-patches, successively smaller, but no bands; ventral scopa white at base, then fulvous, but black on the last three sternites.

Belgian Congo: Stanleyville, April 30, 1915 (Lang and Chapin). This species illustrates very well the difficulty of defining subgenera of *Megachile*. In many respects it resembles *M. adeloptera* Schletterer, but it has swollen shining axillæ as in the subgenus *Amegachile* of Friese. Yet the clypeal structure is not that of typical *Amegachile*. There is some resemblance to *Megachile lineolata* Ckll., especially in the pubescence, but that has the ventral scopa all black, and differs in the clypeus and mandibles. The general appearance and color of the wings suggest *M. (Amegachile) geoffrei* Ckll., but that is smaller, with emarginate clypeus, red tegulæ and legs.

***Megachile boswendica* Cockerell**

Belgian Congo: Tshibinda, Aug. 24 (W. P. C.).

***Megachile (Eumegachile) montibia* Strand**

Belgian Congo: Tshibinda, Aug. 29 (W. P. C.).

***Lithurgus sparganotes* Schletterer**

Belgian Congo: Stanleyville, April 9, 1915, ♀ (L. and C.).

***Heriades (Noteriades) tricarinatus* (Bingham)**

Belgian Congo: Faradje, Oct., 1912 (L. and C.).

**Ctenoplectra rodhaini** Cockerell

Belgian Congo: Faradje, Nov., 1912 (L. and C.).

**Crocisa delumbata** Vachal

Belgian Congo: Boma, June 17, 1915 (L. and C.). Boma is the type locality. The specimen is considerably larger than Vachal indicates, anterior wing 12 mm.; the markings are very pale blue. It is a male, and in Meyer's key runs exactly to *C. delumbata*.

**Crocisa chapini**, new species

MALE.—Length about 10 mm., anterior wing 9; markings white; scutellum with two large spots, a white fringe under the incision; sternites 2 to 4, but not 5, with lateral white spots. In Meyer's table this specimen runs exactly to *C. tschofferi* Vachal, but it lacks the middle spot on scutellum, and the lateral discal spots on mesothorax are small, so that the distance from one either to the central band or to the marginal band is greater than its diameter. The posterior marks on mesothorax are transverse, not elongated anteriorly. The interrupted abdominal bands are as in *C. tschofferi*, but considerably narrower than in *C. braunsiana* Friese, which Meyer treats, I believe erroneously, as a synonym of *C. tschofferi*. In most respects the insect is exactly like *C. braunsiana*, a species of South Africa. It shows very well the two little bare, shining black triangles at the middle of front of mesothorax, which are so characteristic of *C. braunsiana* but are wanting in *C. tschofferi*.

Belgian Congo: Boma, June 17, 1915 (L. and C.). The original *C. tschofferi* came from Boma; my specimen, which agrees with the description, is from N. E. Rhodesia. There is a possibility that the present insect is a variety of *C. tschofferi*, and the Rhodesian one distinct, but so far as I can judge from the literature, the interpretation given is correct. It is remarkable that insects from such totally different environments as Boma and Willowmore should be so much alike.

**Crocisaspidea maculata** (Friese)

Belgian Congo: Faradje, Nov. 12 (L. and C.).

**Nomia notabilis** Schletterer

Belgian Congo: Stanleyville, April 13, 1915, ♂ (L. and C.); The specimen is peculiar for the red hind basitarsi, thus showing an approach to *N. bicornigera* Strand, which seems to be only a race of *N. notabilis*.

**Nomia speciosa** Friese

Belgian Congo: Kinshasa, June 1, 1915 (L. and C.); Elisabethville, Sept. 15, ♀ (W. P. C.). In the Kinshasa specimen the upper part of clypeus has a smooth shining band, and the supraclypeal area is dull. In the Elizabethville specimen the clypeus lacks this band, and the supraclypeal area is shining in middle. I believe these differences are merely individual.

**Nomia elephas** Strand

In the American Museum is a type of *N. albocærulea* Friese, female, from Kigonsera. The species was published by Strand as *N. elephas*, and Friese's description did not appear, though the name he gave has been cited. From Kafubu Mission, Katanga, Sept. 19 (A. M.), I have what I can only consider the hitherto unknown male of this species. The face is densely covered with cream-colored hair; flagellum long and slender, simple, ferruginous beneath; thorax above with abundant, gray hair, and black hairs intermixed; second cubital cell, as in female, is strictly parallel-sided, higher than long, receiving recurrent nervure about middle; legs black, small joints of front tarsi red, of the others, which are elongated, pale yellowish with dusky tips; hind femora slender, in lateral view almost parallel-sided, basal half beneath with short stiff white hair; hind tibiæ normal, broadened apically; abdomen with first tergite evidently punctured and shining, black parts of the others dull and not evidently punctured; pallid apical depressions as in female, except that they are about twice as broad, and the first is orange, the second and third strongly flushed with orange basally, the bands otherwise are pale grayish; venter clear red, fourth sternite broadly whitish apically; two brushes of long white hair subapically beneath.

In Strand's table this species runs nearest to *N. stylopicata* Strand, which according to Hedicke is the same as *N. somalica* Friese. However, this is a very different species.

**Nomia langi**, new species

**MALE.**—Length about 9 mm., anterior wing 7.4; black, rather slender, head and thorax with pale yellowish-tinted pubescence, dense and glittering on face, very thin and short on thorax above; eyes dark brown; face broad; mandibles entirely black; antennæ long, black; mesothorax entirely dull seen from the front, but posteriorly punctured and shining; scutellum dull, not evidently bi-gibbous; postscutellum densely hairy; base of metathorax with a broad shining coarsely ridged transverse area; tegulae small, mainly black, outwardly rufous; wings dilute reddish fuliginous, the apical margin rather darker, more dusky and less red; basal nervure falling just short of nervulus; second cubital cell large and broad, receiving recurrent nervure toward the end; legs mainly black, but tarsi and front and middle tibiae at apex rufous, hind tibiæ entirely red, except an elongated blackish shade on outer face; hind trochanters with a small tooth; hind femora only moderately enlarged, with a strong tooth beneath toward end; hind tibiæ robust but simple, a slight swelling on inner side where there is a tooth in some species; abdomen very finely and densely punctured, the first two tergites brownish; tergites with pallid hind margins, on which are broad bands of dull white hair; venter shining, with clear white tegumentary bands on sternites three and four.

Belgian Congo: Stanleyville, April 17, 1915 (L. and C.). A species of rather ordinary aspect, belonging with *N. welwitschi* and *N. rubripes* in a group with dull mesothorax. The three males may be separated thus:

- |  |                         |
|--|-------------------------|
| 1.—Hind femora black, much less robust.....          | <i>langi</i> Ckll.      |
| Hind femora red or largely so, much more robust..... | 2.                      |
| 2.—Tegulae dark.....                                 | <i>welwitschi</i> Ckll. |
| Tegulae clear red.....                               | <i>rubripes</i> Friese. |

***Nomia cinerea* Friese**

Cape Province: Calvinia, Nov. 12 and 14, ♀ (A. M.); foot of Van Rhyn's Pass, Nov. 21, ♂, ♀ (A. M., J. Jooste); Graaff-Reinet, Oct. 25, ♂ (Ckll.); Blaukrans, near Calvinia, Nov. 17, ♂ (J. O.). One of each sex has been placed in the American Museum. Friese knew only the male.

***Nomia (Stictonomia) amoenula stanleyi*, new subspecies**

**MALE.**—Length about 6 mm., anterior wing 5; black, robust, the pubescence pale ochreous; head broad, orbits strongly converging below; face densely covered with light yellow hair; tongue short, dagger-like; antennæ long, reaching scutellum, flagellum ferruginous beneath; front dull, vertex glistening; mesothorax moderately shining, with dense fine punctures and sparse large ones, anterior half or more with thin fulvous tomentum, but fulvous hair dense on upper border of prothorax and tubercles; the dense fulvous hair also tends to form two spots on anterior border of mesothorax; scutellum with two long sharp spines; area of metathorax with a narrow shining channel crossed by fine plicæ, not very closely set; a sharp keel at each side of lower half of posterior face of metathorax; tegulae very large, expanded posteriorly, bright apricot color with paler margins; wings dusky hyaline, brownish apically; stigma large, dark reddish; basal nervure strongly arched, meeting nervulus; second cubital cell about square, first recurrent nervure meeting second intercubitus; legs black, with pale fulvous-tinted hair, tarsi brownish, the anterior and sometimes also the middle tarsi clear red; hind legs simple, the femora slender; abdomen broad, with basal and apical bands of ochreous-tinted hair; first tergite with apical band represented only at sides, but with also a patch of pale ochreous hair on each side of disc; first tergite polished, with sparse very large punctures, running more or less in transverse rows; second tergite with similar but smaller punctures; third with still smaller. The first recurrent nervure varies in position.

Belgian Congo: Stanleyville, April, 1915 (L. and C.). I should have supposed this to be the imperfectly described *N. atrinervis* Vachal, but the nervures are brown, certainly not black. From the wide distribution cited by Vachal for his *N. atrinervis*, and the wide range of measurements (wing, 4.5 to 7 mm.), I infer that his series was probably composite. Libreville may be designated as the type locality.

***Nomia (Stictonomia) amoenula aloëphila*, new subspecies**

**MALE.**—Anterior wing 4.5 mm.; in all respects closely allied to the last, but differing thus: tegulae with the elevated portion dark reddish brown, the margins

whitish; hair of face creamy white; thorax above rather more covered with fulvous tomentum; first recurrent nervure reaching second cubital cell an appreciable distance before the end. The apex of the abdomen, with a broad dentiform lobe on each side and orange hair between, is as in *N. amoenula stanleyi*.

**FEMALE** (Type).—Length a little over 5 mm., anterior wing 4.7; face very broad, with thin dull white hair; face and front very densely punctured, the front becoming striate; clypeus shining; flagellum short, obscurely reddish beneath; scutellum without distinct elevations; elevated part of tegulæ practically black; postscutellum densely covered with tomentum; hair-spots at sides of first tergite very distinct; legs black, the small joints of tarsi reddish.

Belgian Congo: type locality (♀), 77 kilom. south of Bukavu, at flowers of *Aloe*, Aug. 28 (W. P. C.); Stanleyville, Feb., 1915, ♂, March, 1915, ♀ (L. and C.). I had sorted this out from *N. amoenula stanleyi* as a certainly distinct species, but the males agree so exactly in structure that I cannot see more than racial difference. The character of the position of the first recurrent nervure is variable and cannot be used to separate two species. The female has of course no scutellar spines. Strand published a good table for female bees of this alliance, with very large tegulæ, which may be abbreviated as follows:

- 1.—First tergite with a pair of hair-spots; postscutellum densely tomentose.....2.  
First tergite without such hair-spots; postscutellum thinly haired.  
*N. schubotzi* Strand, *N. patellata* Magretti, and *N. corruscatrix* Strand.
- 2.—Tergites with basal hair-bands.....3.  
Tergites with only apical hair-bands.  
*N. interstitinervis* Strand and *N. latipes* Morawitz.
- 3.—Stigma yellow; species about 7 mm. long.....4.  
Stigma black; species often smaller.....5.
- 4.—Mesonotum dull.....*N. anthidioides* Gerstaecker.  
Mesonotum strongly shining.  
*N. ruficornis* Spinola, *N. tegulata* Smith and *N. oxybeloides* Smith.
- 5.—Vertex shining; veins black.....*M. garua* Strand.  
Vertex minutely reticulate (really very densely punctured); veins brown.  
*N. amoenula* Gerstaecker.

The black veins of *N. garua* suggest Vachal's *atrinervis*, and Strand, when describing, added (*atrinervis* Vachal ??). It appears, however, that *N. garua* has dark tegulæ, while *atrinervis* is said to have them red. Our female runs best to *N. amoenula*, agreeing in the vertex, but differing in the dark, obscurely reddish flagellum, that of *N. amoenula* being very bright red beneath except at base. Male *N. amoenula* has the abdomen more or less red.

From all the above I can only infer that there is a wide-spread species, *N. amoenula* (which runs into various subspecies or races),

which may perhaps be addicted to particular flowers. I have named the two forms before me in accordance with this idea.

**Nomia austrotegulata, new species**

FEMALE.—Length about 8 mm.; face very broad, with white hair; flagellum red beneath; vertex very densely punctured; a band of very dense pure white hair along front of mesothorax and entirely covering tubercles; pleura with dense white hair; a narrow band of white tomentum in front of scutellum, and postscutellum covered with the same; mesothorax highly polished, with scattered large punctures; scutellum with smaller punctures; channel at base of metathorax extremely narrow, with cross-ridges, the large triangular space below it highly polished; tegulae very large, reddish white, with a brown spot; wings clear hyaline, with light orange stigma; second cubital cell about square; first recurrent nervure reaching extreme basal corner of third cubital cell; all the tarsi, hind tibiae, and anterior tibiae in front, bright red, middle tibiae a little dusky, and covered with white hair; hind basitarsi very broad, with a shining pale yellowish apical brush; abdomen with a broad band of hair across first tergite and basal and apical bands on the others; hair of fifth tergite suffused with light red; first tergite with the raised portion beyond the band narrow, smooth and shining in middle, on each side broadening to admit a series of punctures between two ridges; venter rufous.

Cape Province: Willowmore, Dec. 15, 1901 (Brauns). Sent to the American Museum by Dr. Friese as *N. tegulata* Smith, and runs exactly to that in Strand's table. However, it is not the genuine *N. tegulata*, the type of which came from Sierra Leone, and has subhyaline wings, more fuscous toward apex, and metathorax dull. It is close to *N. anomala* Kirby, *N. duplocincta* Sichel, and *N. magrettii* Gribodo. Compared with *N. anomala*, the nervures are paler, the stigma is lighter and more orange, not dark-margined. It is a typical desert bee.

**Nomia hadrosoma, new species**

FEMALE.—Length about 6 mm., anterior wing 5.7; black, robust, mandibles entirely black; the short thick flagellum obscurely rufescence beneath, especially toward end; face very broad, with dull white hair at sides; clypeus closely punctured, the punctures running in lines; vertex mostly dull, but shining between ocelli; mesothorax and scutellum dull, with dense minute punctures and scattered large ones (weak on mesothorax); postscutellum with dense white tomentum on basal half, not always apparent; basal channel of metathorax about half as wide as postscutellum in middle, dull, with very feeble, hardly noticeable sculpture; tegulae very large, the elevated portion pure black, the flat portions dull white; wings conspicuously dusky, especially in the apical field; stigma rather large, dusky brown; nervures brown; basal nervure meeting nervulus; second cubital cell about square, or somewhat narrowed above; first recurrent nervure meeting second intercubitus; legs mainly black; anterior and middle tibiae each with a conspicuous tuft of red hair in front; hind tibiae and basal half of basitarsi light ferruginous; abdomen stout, with basal and apical pale cinereous hair-bands; first tergite shining, with no evident punctures (the microscope shows scattered punctures toward the base), with some pale hair

at sides, but no apical or discal band, nor any spots such as occur in related species; apical band of fourth tergite very broad, dense and white; fifth with gray hair, white on the margin.

Belgian Congo: Dilolo (type locality), July 24 and 25, 3 ♀ (J. O.); Tshibinda, Aug. 26 (A. M.) Larger than the *N. amoenula* forms, mesothorax pruinose at anterior corners, scutellum with scattered punctures. By the coloration of the hind legs it suggests *N. diducta* Vachal, from Somaliland, but that has clear wings and yellow nervures. A cotype has been placed in the American Museum.

#### ***Nomia rubra* Friese**

I have before me, from the American Museum, one of Friese's series, a female from Ikutha, British E. Africa. *N. rubra* was primarily based on the male, from Shilouvane, N. Transvaal. In 1916, Meade-Waldo briefly indicated some characters of *N. strenua* Cameron MS., in a table. In 1920, I described what I took to be this *N. strenua* from Natal. Whereupon Dr. Hans Brauns wrote that he had both sexes of *N. rubra* Friese, from Bulawayo, S. Rhodesia and Warmbad, Transvaal, and that my *N. strenua* was only a geographical race of it, with no structural differences at all. Now I have from the British Museum a male *N. strenua* from Lonely Mine, Matabeleland (Dr. H. Swale), one of the specimens used by Meade-Waldo, and it has a bright red abdomen, and appears to be the genuine *N. rubra* Friese. But the female *N. rubra* from Ikutha is a distinct race or even species and, as my Natal insect is not the real *N. strenua*, two new names are required, as follows:

#### ***Nomia rubra atricauda*, new subspecies**

*Nomia strenua* COCKERELL, 1920, Annals Durban Museum, II, p. 293, ♂, ♀. Durban, Natal.

The form with dark abdomen. Structurally, as Brauns stated, it closely agrees with the red abdomened *N. strenua*, which I take to be *N. rubra*. In my specimen of the latter, however, the first recurrent nervure joins the second cubital cell slightly before the middle, whereas in the Durban insect it joins it well beyond the middle. The male is the type.

#### ***Nomia rubra politissima*, new subspecies or species**

The female from Ikutha, with shining very bright red abdomen, differs structurally in the abdomen, the first two tergites being smooth, hardly at all punctured, instead of densely punctured. The basal nervure meets the nervulus, and the square second cubital cell, quite as broad as high, receives the recurrent nervure near its end. The mesothorax is more shining, and much less coarsely and densely punctured. The tegu-

læ, the hair on face, and the characteristic pubescence of the front legs do not differ.

**Nomia granulata** Vachal

Belgian Congo: Stanleyville, April, 1915, ♂ (L. and C.). The two little processes on the third sternite, mentioned by Vachal, are very apparent.

**Nomia patellifera** Westwood

Belgian Congo: Stanleyville, five taken in April (L. and C.); Katanga Mission, Sept. 17 (L. O.).

**Nomia montana** (Friese)

One of Friese's types is in the American Museum; it is a female, with the shining tegulæ almost black; stigma small, dark reddish; second cubital cell very broad, wings dilute fuliginous; abdomen with pure white hair-bands on tergites three and four, and at sides of one and two, hair at apex red. Hott-Holl Mts., 4000 ft. Friese described this as a variety of *N. burorum* Friese, but it is certainly a distinct species. The assigned male is perhaps not conspecific; I designate the female, on which the main description is based, as the type.

*N. nudiventris* Friese, which Friese considered allied to *N. burorum*, is easily separated from the members of that group by the transverse channel at base of metathorax broadened in middle and angulate posteriorly, abruptly contrasting with the dull metathorax below. The tegulæ are black, the wings brown.

**Nomia burorum** Friese

A male type from Sunday River (Dr. Brauns) has the mandibles red, black at end; face very broad, its hair clear white; tegulæ light rufous; hind femora with a strong tooth beneath toward end; fourth sternite with a pair of strong converging ridges. *N. fulvipes* Friese (I have one of Friese's specimens, from Bothaville, O. F. S., taken by Dr. Brauns) is extremely close to *N. burorum*, and has the toothed hind femora. However, the male flagellum is shorter, the joints are broader than long, but in *N. burorum* they are conspicuously longer than broad.

**Nomia dominarum**, new species

MALE.—Agrees with *N. burorum* in nearly all respects, but still is easily separated by the hind femora having no tooth below, but at most a very slight angle, and the mesothorax being entirely dull, without evident sculpture, whereas in *N. burorum* and *N. fulvipes* it is strongly punctured, and shining between the punctures. The two converging ridges on the fourth sternite are very strong and distinct. Tegulæ pale testaceous; wings yellowish, with the broad margin very dark; basal nervure

only gently arched, meeting nervulus; stigma red, rather large; second cubital cell very broad, receiving recurrent nervure far beyond the middle; hair of face white; antennæ rather long, flagellar joints longer than broad; tibiæ and tarsi, femora at apex, and stripe beneath anterior femora, red, but black stains on middle and hind tibiæ; fourth tergite before the pale band elevated, appearing dentiform in lateral profile, but more or less excavated or depressed in middle, between two little shining elevations. The size varies; anterior wings 8.2 to 9 mm.

Cape Province: Lady Grey (type locality), 4 ♂, Dec. 8, 1924, Jan. 29, 1925, Feb. 13, 1925, all collected by R. I. Nel, and sent by the Imperial Institute of Entomology. Natal; Greystown, Oct. 20 (A. M.). The Greystown one has the head shorter and the face proportionately broader.

Differs from *N. nubecula* Smith by the black antennæ, non-tuberculate scutellum, and lack of fulvous pubescence. In Strand's table it falls nearest to *N. kigonserana* Strand, but the hind tibiæ and tarsi are red, not yellow, the flagellum is black, and the insect is larger. A co-type has been placed in the American Museum.

*Nomia nigripes* (*N. burorum* var. *nigripes* Friese), male with black legs and no converging ridges on fourth sternite, must also be a distinct species, but I have not seen it.

#### **Ceratina ruficauda, new species**

FEMALE.—Length fully 11 mm. (a little over 12 with head thrust forward), anterior wing 8.5; densely punctured, head and thorax pure black, abdomen clear bright ferruginous, with first tergite and sides of second black, and the hind margins of the tergites narrowly dark red; legs black, with reddish hair, middle femora angulate beneath; wings fuliginous, pallid basally. Head and thorax practically nude; labrum black, rugose; clypeus high, coarsely longitudinally striate, with a broad reddish yellow transverse apical bar, and on each side there is a semicircular mark of the same color next to the base of the lateral lobe of the clypeus but not on the clypeus; vertex with excessively large punctures, a shining spot behind ocelli; antennæ black; mesothorax and scutellum with large punctures, but not so large as on vertex; basal nervure falling short of nervulus; tegulæ small, reddish black; base of metathorax dull; abdomen closely punctured, hardly shining; venter black at base, and with black bands.

Belgian Congo: Malela, 6° S, 12° 40' E, July, 1915 (L. and C.). A very distinct species, to be compared only with the much smaller (7.5 mm., wing 6 mm.) *C. allodapoides* Strand, from Uelleburg.

#### **Ceratina viridis Guérin**

Belgian Congo: Stanleyville, Apr. 17, 1915, ♀ (L. and C.); Malela, July 5, 1915 (L. and C.). These are smaller than usual, and the Stanleyville one has the apical half of abdomen strongly flushed with blue. *C. congoënsis* Meunier may have been composite, but the typical female had

no clypeal spot. It is supposed to differ structurally by having a keel on tergite six. I feel sure that this was the sulcus which can be seen in *C. viridis*, and can be mistaken for a keel.

***Allodape langi*, new species**

FEMALE.—Length 9 mm.; head and thorax black, with dull yellow markings, consisting of a rather narrow median stripe the whole length of clypeus, broadly triangular supraclypeal mark, small bands bordering lateral lobes of clypeus, bands along anterior orbits are broad below, curved inward above, two small bars below middle ocellus, band on cheeks (the lower half mostly reddish brown, the yellow there tapering to a fine point), upper border of pronotum, end of tubercles, two narrow stripes on the shining disc of mesothorax (at posterior end enlarged and somewhat bifid), lateral margins of mesothorax, continuing on to axillæ, posterior half of scutellum, and postscutellum; labrum coarsely rugosopunctate, obscurely reddish; mandibles reddish yellow, dark at apex; lower end of cheeks, next to mandibles, produced into a small black tubercle; each side of vertex with a concave shining area; antennæ black, flagellum with a faint brownish tinge beneath; base of metathorax dull, but with a shining margin; mesopleura hairy; tegulæ pale testaceous; wings dusky hyaline, distinctly brownish; stigma large but narrow, red with a black margin; nervures mostly dark, but the recurrents and the outer intercubitus thin and pale; first recurrent nervure far from base of second cubital cell; legs black, knees narrowly rufous, small joints of tarsi all red, front tibiæ red anteriorly, middle and hind tibiæ rufous at apex; hair on inner side of middle tarsi extremely bright red; scopæ of hind legs pale red, with a deep red spot on middle of hind margin of tibiæ; abdomen with first tergite pale red, with a large cream-colored spot at each hind corner; second tergite pale red, with a narrow dull yellow band at extreme base, and a large black spot on each side, some distance from margin; tergites 3 to 6 black, with the extreme base abruptly light yellow, the pale band broadening in middle on 4 and 5, and on 6 very broad, but not reaching sides; venter red at base, otherwise mainly black.

Belgian Congo: Stanleyville, April, 1915 (L. and C.). Allied to *A. macula* Strand, but that is much smaller. Also to be compared with *A. abdominalis* Brauns and *A. exoloma* Strand, but easily distinguished by the pattern of the abdomen.

***Allodape chapini*, new species**

FEMALE.—Length about 7.5 mm.; head and thorax black, yellow and dark red; the yellow markings consist of an obscure spot at apical middle of clypeus (its lower portion shining and reddish), bands along inner orbits (the part opposite clypeus broad, the upper part very narrow, diverging a little from eye at upper end), bands along posterior orbits (broad above, coming to a point below), broad bow-shaped band on scutellum (posteriorly emarginate in middle), margin of pronotum, and margin of tubercles (indistinctly); postscutellum with an obscure yellowish band; the dark red parts are labrum, mandibles (except end), cheeks (except yellow stripe), mesopleura and metathorax; scape short, with red spots at base and apex; flagellum black, very faintly brownish below; tegulæ hyaline in front, posteriorly light red; wings hyaline; stigma very large, rufous; lower section of basal nervure arched, falling considerably short of nervulus; second cubital cell considerably shorter than in

*A. langi*, with the face on marginal cell much shorter; legs brownish red, or reddish brown, front femora with a yellow stripe beneath, failing basally; abdomen broad, dull light red, fourth and fifth tergites broadly dusky at sides of base, sixth black; venter dusky red.

Belgian Congo: Malela, July 5, 1915 (L. and C.). In Strand's table falls near *A. exoloma* Strand, which is larger, and has a yellow stripe on clypeus, and the legs mainly black. It may also be compared with the still larger *A. mucronata* Smith, from the Cape. The red abdomen separates it from *A. scutelligera* Strand.

***Allodape equatorialis*, new species**

**MALE.**—Length about 5 mm.; shining black, with clypeus (constricted below middle), very small lateral marks (next to clypeal constriction), large mark on base of mandibles, stripe on scape, and tubercles (but not upper border of pronotum) of a very pale yellow or cream-color; labrum black; tegulae very dark brown; wings hyaline and iridescent; stigma large, dark sepia; second cubital cell receiving first recurrent nervure close to base, and second a little more remote from apex; all the tarsi pale yellowish stained with reddish. Very close to *A. facialis* Gerstaecker, with the same large eyes and produced clypeus, but *A. facialis* has black mandibles and a smaller, paler, stigma. It also resembles *A. albitarsis* Friese and *A. progonia* Strand.

Belgian Congo: Stanleyville, March, 1915 (L. and C.).

***Anthophora plumipes* (Fabricius)**

Belgian Congo: Elisabethville, Sept. 11, ♀ (J. O.); Tenke, July 30 and Aug. 1, ♂ (J. O.); Dilolo, July 26, ♂ (Ckll.). The female is exactly like one from Zanzibar (Hildebrandt). The males differ from the type in having only a very minute light mark on scape.

***Anthophora nigroclypeata* Friese**

Belgian Congo: Garamba, July, 1912, ♂ (L. and C.). The male of this species has not been described. The face-markings are creamy white; a very broadly triangular supraclypeal mark, V-like lateral marks, a broad band across lower margin of clypeus, broadest in middle, and connecting with the vertical band, which narrows to a point at top of clypeus; labrum, except the usual basal spots, and mandibles, except apically, also are white; clypeus very prominent; antennae black; femora obscurely reddish.

***Anthophora rubricans*, new species**

**FEMALE.**—Length about 11.5 mm., anterior wing 8; black, very robust; head and thorax above with light red hair profusely mixed with black; front with pale fulvous hair, but a tuft of black between antennæ; pure white hair at each side of clypeus and on cheeks; bright red hair on upper part of sides of thorax, but white below; metathorax with light red hair; yellow face-marks consisting of broad triangular supraclypeal mark, narrow median stripe on clypeus, apical corners of clypeus (in some

specimens with an entire narrow marginal band, connecting with vertical stripe), stripes along sides of clypeus, large mark on base of mandibles, and labrum except lateral corners and rather broad upper margin; a shining tubercle at each side of upper part of labrum; antennæ entirely black; tegulae bright ferruginous; wings dusky, with dark nervures, second cubital cell strongly contracted above; legs black, with mostly red hair, a white fringe behind anterior femora; middle tibiæ on inner face with a specialized bare hollowed black area; middle basitarsi with a stiff brush of pure white hair along posterior margin; hind tibiæ and basitarsi with very bright red hair on both sides, but a white fringe posteriorly on tibiæ; basitarsi with a large black brush at apex; abdomen with four broad very bright ferruginous bands of appressed hair; first two tergites with black hair on disc, next two with partly black and partly light; apex with a very large black patch, the margin on each side of it with a fringe of long pure white hair; venter with dark red hair, but extreme margins of tergites with white.

Cape Province: top of Van Rhyn's Pass, Nov. 19 (W. P. C.), type; Nieuwoudtville, Nov. 18 (J. O.); Uitenhage, Oct. 30 (J. O.); near Oudtshoorn, Nov. 1, (A. M.); Doorn River, near Camfer, Nov. 3 (A. M.). Looks like *A. capensis* Friese, but easily known by the pure black hair on second tergite before the band, and the color of hair on hind legs. A cotype has been placed in the American Museum.

***Anthophora cincta* (Fabricius)**

Belgian Congo: Malela, 6° S., July 9, 1915 (L. and C.). One of each sex; the male has the mesothorax shining posteriorly, the female has it dull.

***Anthophora albocaudata* Dours**

Belgian Congo: Stanleyville, Feb., 1915, ♀ (L. and C.).

***Anthophora advena* Smith**

Belgian Congo: Dilolo, July 25, ♂ (J. O.).

***Anthophora advenula* Cockerell**

Belgian Congo: Stanleyville, April 4, 1915 (L. and C.). In my original description, for length 9 to 10 mm., read length 14 to 15 mm.

***Anthophora latipes* Friese**

Belgian Congo: Katanga Mission, at flowers of *Melastoma*, Sept. 17 (Ckll.).

***Anthophora vestita* Smith**

Female with clypeus entirely black, Nieuwoudtville, Cape Province, Nov. 22 (J. O.). With a yellow band along lower margin of clypeus. Uitenhage, C. P., Oct. 30 (W. P. C.); near Oudtshoorn, C. P., Nov. 1 (Ckll.); Greystown, Natal, Oct. 20 (W. P. C.).

**Anthophora labrosa** Friese

Cape Province: Nieuwoudtville, Nov. 19 (A. M.), Nov. 20 (W. P. C.). Differs a little from description in having no yellow marks on base of labrum, and tarsi pale-haired.

**Anthophora niveata** Friese

MALES.—(1.) Clypeus with two well-developed black discal bars. Cape Province: Van Rhyn's Pass, Nov. 11 (J. O.); Calvinia, Nov. 16 (A. M.).

(2.) Clypeus with only faint traces of bars. Cape Province: Graaff-Reinet, Oct. 22 (J. O.); top of Van Rhyn's Pass, Nov. 19 (Ckll.).

FEMALES.—(1.) Lower margin of clypeus with a transverse band, but the longitudinal mark is truncate below, and does not reach it. Van Rhyn's Pass, C. P., Nov. 11 (J. O.).

(2.) Marginal band on clypeus joining vertical one. (2a.) Rich fulvous hair on thorax posteriorly. Calvinia, C. P., Nov. 14 (A. M.). (2b.) No fulvous hair on thorax posteriorly. Cape Province: Calvinia, Nov. 12 (J. O.), Nov. 13 (W. P. C.); Whitehill, Nov. 26 (J. Archer); Graaff-Reinet, Oct. 25 (Ckll.); Blaukrans, Nov. 17 (L. O.).

**Anthophora circulata** (Fabricius)

MALES.—(1.) Flagellum with the red dark. Belgian Congo: Dilolo, July 23 (J. O.).

(2.) Flagellum clear red beneath. (2a.) Hair of thorax whitish, not distinctly fulvous. Belgian Congo: Dilolo, July 25 (J. O.). (2b.) Hair of thorax above light bright fulvous. Three from Zambi, Belgian Congo, June 22, 1915 (L. and C.).

FEMALE.—Belgian Congo: Dilolo, July 23 (J. O.).

**Anthophora fallax** Smith

Cape Province: Van Rhyn's Pass, Nov. 21 (J. O.).

**Anthophora torrida** Smith

Belgian Congo: Malela, July 9, 1915 (L. and C.); Stanleyville, April 19, 1915 (L. and C.).

**Anthophora spilostoma** Cameron

Cape Province: Graaff-Reinet, Oct. 25 (J. O.). This is identical with a species from near Johannesburg, in the British Museum, standing as *A. spilostoma*. It does not exactly agree with Cameron's description, thus the tegulae are light fulvotestaceous, and Cameron says piceous. I cannot at present explain the discrepancy.